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199 31 454.3	8 July 1999 (08.07.1999)	DE
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199 31 563.9	8 July 1999 (08.07.1999)	DE
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/00805 A3

(54) Title: *CORYNEBACTERIUM GLUTAMICUM* GENES ENCODING PROTEINS INVOLVED IN MEMBRANE SYNTHESIS AND MEMBRANE TRANSPORT

(57) Abstract: Isolated nucleic acid molecules, designated MCT nucleic acid molecules, which encode novel MCT proteins from *Corynebacterium glutamicum* are described. The invention also provides antisense nucleic acid molecules, recombinant expression vectors containing MCT nucleic acid molecules, and host cells into which the expression vectors have been introduced. The invention still further provides isolated MCT proteins, mutated MCT proteins, fusion proteins, antigenic peptides and methods for the improvement of production of a desired compound from *C. glutamicum* based on genetic engineering of MCT genes in this organism.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/31 C07K14/34 C12N15/52 C12Q1/68 C12P1/04
C12P13/04 C12N1/21 //(C12N1/21,C12R1:13,1:16)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07K C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
BIOSIS, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 752 472 A (AJINOMOTO KK) 8 January 1997 (1997-01-08) the whole document ---	1,2, 8-19, 25-34
X	EGGELING L ET AL: "Transport mutants and transport genes of Corynebacterium glutamicum." ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, vol. 782, 1996, pages 191-201, XP000971888 ISBN: 0-89766-962-2 the whole document & Conference;Deauville, France; October 16-21, 1994. --- -/--	1,2, 10-19

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 January 2001	20.04.01

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	ANDRES S.M.

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Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SIEWE RUTH M ET AL: "Functional and genetic characterization of the (methyl)ammonium uptake carrier of Corynebacterium glutamicum." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 271, no. 10, 1996, pages 5398-5403, XP002157003 ISSN: 0021-9258 the whole document ---	1,2, 8-19, 25-31,34
X	EP 0 786 519 A (HUMAN GENOME SCIENCES INC) 30 July 1997 (1997-07-30) abstract; claims page 1220, line 30 -page 1222, line 26 ---	6-8, 10-13, 17,23
A	EP 0 252 558 A (SCLAVO SPA) 13 January 1988 (1988-01-13) the whole document -----	35

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 00/00926

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Claims 1-38 (all partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: Invention 1 : claims 1-38 (all partially)

   A nucleic acid molecule from Corynebacterium glutamicum defined by SEQ ID 1 and encoding a MCT protein (SEQ ID 2) involved in the production of a fine chemical. Vectors and hosts expressing the nucleic acid molecule. Methods for producing a fine chemical using the encoded protein, and for diagnosing the presence or activity of Corynebacterium diphtheriae.

2. Claims: Inventions 2 to 267 : claims 1-38 (all partially)

   As for invention 1, but concerning each individual pair of SEQ IDs in Table 1 with the exception of the F-designated genes.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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